MUTCD 2003
CALIFORNIA SUPPLEMENT

May 20, 2004

PART 6
TEMPORARY TRAFFIC CONTROL

STATE OF CALIFORNIA
BUSINESS, TRANSPORTATION AND HOUSING AGENCY
DEPARTMENT OF TRANSPORTATION

PART 6. TEMPORARY TRAFFIC CONTROL

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TABLES

CHAPTER 6A. GENERAL

Section 6A.01 General

The following is added to this section:

Support:

Per the provisions of the Construction Safety Orders in the California Code of Regulations (Title 8, Division 1, Chapter 4, Subchapter 4, Article 11, Sections 1598 and 1599), this Part of the MUTCD and this Supplement is incorporated by reference as part of those regulations.

It is the responsibility of the Contractor or Organization performing work on, or adjacent to, a highway to install and maintain such devices which are necessary to provide passage for the traveling public (including pedestrians and bicyclists) through the work, as well as for the safeguard of workers.

Standard:

Before work begins, traffic control plans, when developed for handling traffic through a construction or maintenance project, shall be approved by the Engineer of the public agency or authority having jurisdiction over the highway.

Support:

The following references from the California Vehicle Code relate to temporary traffic control:

- Section 112 – Amber.
- Section 165 – Authorized Emergency Vehicle.
- Section 291 – Department of Transportation.
- Section 385 – Local Authorities.
- Section 21351.3 – Use of Metric System Designations.
- Section 21363 – Detour Signs.
- Section 21367 – Traffic Control: Highway Construction.
- Section 21466.5 – Light Impairing Driver's Vision.
- Section 22362 – Speed Limit Where Persons at Work.

CHAPTER 6B. FUNDAMENTAL PRINCIPLES

Section 6B.01 Fundamental Principles of Temporary Traffic Control

Standard:

In Paragraph 9 ("General plans…"), sub-heading B, second sentence ("Any changes in…"), the word "should" is changed to "shall".

The following is added to this section:

Support:

Refer to Department of Transportation's Highway Design Manual Section 110.7 for Traffic Control Plans. See Section 1A.11 for information regarding this publication.

Standard:

On State highways, covers for temporary traffic control signs shall be of sufficient size and density to completely block out the message so that it is not visible either during the day or at night. Covers shall be fastened securely to prevent movement caused by wind action. Refer to Department of Transportation's Standard Specifications Section 12-3.06. See Section 1A.11 for information regarding this publication.

CHAPTER 6C. TEMPORARY TRAFFIC CONTROL ELEMENTS

Section 6C.01 Temporary Traffic Control Plans

The following is added to this section:

Support:

On State highways, refer to Department of Transportation's Construction Manual Chapter 2 (Safety and Traffic) for temporary traffic control plans, speed zones, night work, transportation management plans and Construction Zone Enhanced Enforcement Program (COZEEP). See Section 1A.11 for information regarding this publication.

See Section 2B.116 for more information on speed limits and zones.

Construction Speed Zones

Support:

Construction speed zones are established on roads under construction where reduced speed is necessary to limit the risk of an accident to workers and the traveling public during all hours of the day and night. Protection of workers during working hours is provided for under CVC Section 22362.

Guidance:

Construction speed zones should be avoided if traffic can be controlled by other means. Speed restrictions should be imposed on the public only when necessary for worker or public safety.

Standard:

Where traffic obstructions exist only during the hours of construction, the speed zone signs shall be covered during non-working hours.

Guidance:

The traveled way should be signed and delineated to communicate physical conditions to the motorists such as curvature, narrow roadways, detours, rough roads, dips or humps, etc.

Option:

The Advisory Speed Plaque (W13-1) may be used in combination with various warning type signs to decrease speed at a particular location.

Guidance:

To preserve the effectiveness of the W13-1 sign, it should not be used unless the condition to which it applies is immediate and will be experienced by all motorists.

Option:

Reduced speed limits in construction zones may be established by an engineering analysis, which may include a traffic and engineering survey.

Guidance:

The speed limit should not be lowered more than 15 km/h (10 mph) below the posted or maximum speed.

Option:

If the project falls within an established 105 km/h (65 mph) zone, and a 70 km/h (45 mph) speed limit is considered necessary, it may be posted only if the approaching speed limits are lowered in two stages (i.e., first to a 90 km/h (55 mph) speed limit followed by a reduction to the desired 70 km/h (45 mph).

Guidance:

Speed Limit and End Zone signs should be installed at locations jointly agreed upon by the Traffic Engineer and the Construction Engineer. The speed zone should be verified by an engineering and traffic survey.

Support:

Orders for construction speed zones are ordinarily issued for the entire length of the construction project. This avoids the necessity and resulting delay of obtaining a new order each time the speed restriction signs require relocation to fit the conditions. It is not the intention, however, that the entire length be posted for the duration of the contract.

Standard:

Speed restriction signs shall be posted only in areas where the traveling public is affected by construction operations.

Guidance:

As the construction progresses, signs should be moved as appropriate.

Standard:

Signs shall be removed immediately following completion of the construction or change in the conditions for which they were installed. When the construction is completed or the speed restriction is no longer necessary, the formal speed zone orders shall be revoked.

Section 6C.04 Advance Warning Area

Option

Last Paragraph ("Advance warning may…"), the phrase "sufficiently removed from the road users' path" is deleted and substituted with the text "behind a barrier, more than 600 mm (24 in) behind the curb, or 4.5 m (15 ft) or more from the edge of any roadway".

Section 6C.06 Activity Area

Guidance:

In Paragraph 10 ("The longitudinal buffer…"), the phrase "may also" is changed to "should".

Figure 6C-2. Types of Tapers and Buffer Spaces

Standard:

MUTCD Figure 6C-2 is deleted and replaced with Figure 6C-2 (CA).

Section 6C.07 Termination Area

The following is added to this section:

Option

Conditions may be such that posting of END ROAD WORK (G20-2) signs is not helpful. For example, they should normally not be used if other temporary traffic control zones begin within 1.6 km (1 mi) of the end of the workspace in rural areas, or about 0.4 km (0.25 mi) within urban areas. For normal daytime maintenance operations, the G20-2 sign is optional.

Section 6C.08 Tapers

The following is added to this section:

Standard:

On State highways, Department of Transportation's Standard Plans for Traffic Control Systems (Standard Plans T10 through T17)shall be used. See Section 1A.11 for information regarding this publication.

Table 6C-3. Taper Length Criteria for Temporary Traffic Control Zones

Option:

Table 6C-3(CA) may be used instead of the MUTCD Table 6C-3.

Table 6C-4. Formulas for Determining Taper Lengths

Option:

Table 6C-3(CA) may be used instead of the MUTCD Table 6C-4.

Figure 6C-2 (CA). Types of Tapers and Buffer Spaces

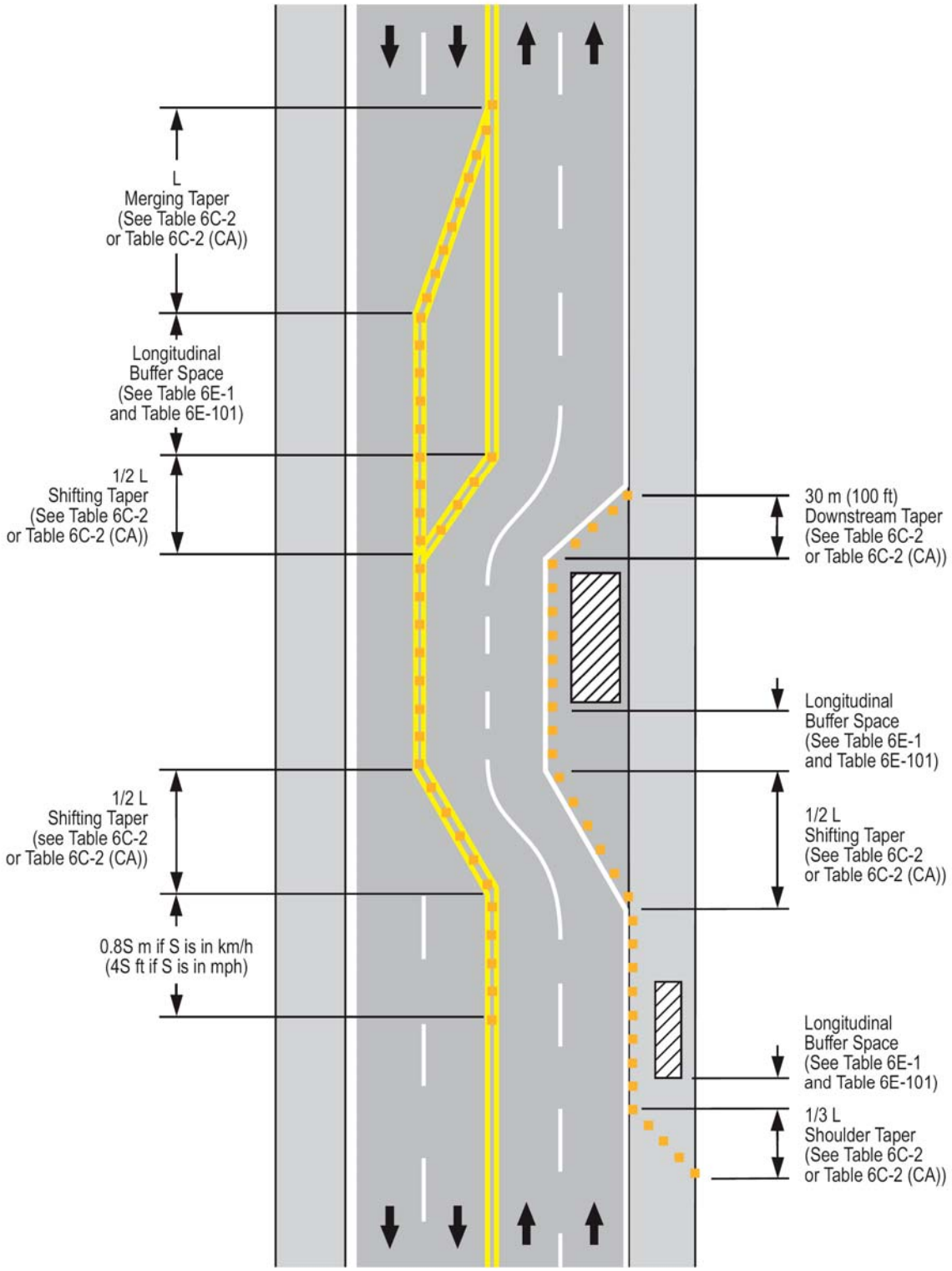


Table 6C-3(CA). Taper Length Criteria for Temporary Traffic Control Zones

Speed* S (km/h)	Minimum Taper Length** for Width of Offset 3.6 m (W)			
	Merging L (m)	Shifting L/2 (m)	Shoulder L/3 (m)	Down Stream (m)
30	21	10	7	30
40	37	19	12	30
50	58	29	19	30
60	84	42	28	30
70	158	79	53	30
80	180	90	60	30
90	203	101	68	30
100	225	113	75	30
110	248	124	83	30

Speed* S (mph)	Minimum Taper Length** for Width of Offset 12 ft (W)			
	Merging L (ft)	Shifting L/2 (ft)	Shoulder L/3 (ft)	Down Stream (ft)
20	80	40	27	100
25	125	63	42	100
30	180	90	60	100
35	245	123	82	100
40	320	160	107	100
45	540	270	180	100
50	600	300	200	100
55	660	330	220	100
60	720	360	240	100
65	780	390	260	100
70	840	420	280	100

* Posted Speed, off-peak 85th percentile speed prior to work starting, or the anticipated operating speed.

** For other offsets use the following merging taper length formula for L:

For speeds of 65 km/h (40 mph) or less, L=WSS/155 (L=WSS/60)

For speeds of 70 km/h (45 mph) or more, L=WS/1.6 (L=WS)

On State highways use Traffic Control Systems in the Caltrans Standard Plans.

Section 6C.09 Detours and Diversions

The following is added to this section:

Standard:

The detour route shall be evaluated for height, weight, and size restrictions. Appropriate signs shall be posted along the route to advise motorists of any restrictions. Refer to CVC 21363 for detour signs.

Option:

Advance signs may be necessary to give trucks an opportunity to turn around and retrace their path or select another route.

Section 6C.13 Pilot Car Method of One-Lane, Two-Way Traffic Control

The following is added to this section:

Option:

Two or more pilot cars may be used to guide two-way traffic through a particularly complex detour.

Section 6C.15 Stop or Yield Control Method of One-Lane, Two-Way Traffic Control

The following is added to this section:

Standard:

The approach to the side that is not closed shall be visible (for a distance equal to the safe passing sight distance for that approach) to the driver who must yield or stop.

Support:

See Section 3B.02 and Figure 6H-11.

CHAPTER 6D. PEDESTRIAN AND WORKER SAFETY

Section 6D.03 Worker Safety Considerations

Support:

The following is added to Paragraph 3 ("The following are the…"), sub-heading D:

The use of regulatory speed zone signing tends to be more effective with law enforcement.

Guidance:

The following is added to Paragraph 4 ("The following are additional…"), sub-heading D:

Care should be taken to ensure that the lighting used for nighttime work does not cause blinding. Refer to CVC 21466.5 for light impairing driver's vision.

Option:

The following is added to Paragraph 4 ("The following are additional…"):

Public Information - Improved driver performance may be realized through a well-prepared and complete public relations effort that covers the nature of the work, the time and duration of its execution, its anticipated effects on traffic, and possible alternate routes and modes of travel. Such programs can encourage the use of alternate routes, thus allowing consideration of temporary lane closures for additional buffer space.

Section 6D.101 Bicycle Considerations

Support:

There are several considerations in planning for bicyclists in temporary traffic control zones on highways and streets:

- A travel route that replicates the most desirable characteristics of a wide paved shoulder or bikeway through or around the traffic control zone is desirable for bicyclists.
- If the traffic control zone interrupts the continuity of an existing bikeway system, signs directing bicyclists through or around the zone and back to the bikeway is desirable.
- Unless a separate bike path through or around the traffic control zone is provided, adequate roadway lane width to allow bicyclists and motor vehicles to travel side by side through or around the zone is desirable.
- Bicyclists should not be led into direct conflicts with mainline traffic, work site vehicles, or equipment moving through or around the traffic control zone.

CHAPTER 6E. FLAGGER CONTROL

Section 6E.02 High-Visibility Safety Apparel

The following is added to this section:

Standard:

The retroreflective clothing, or the retroreflective material added to the clothing, shall have a minimum of one horizontal stripe around the torso.

Option:

White outer garments with retroreflective material may be worn during hours of darkness in lieu of colored vests, jackets and/or shirts.

Section 6E.03 Hand-Signaling Devices

Standard:

In Paragraph 2 ("The STOP/SLOW paddle…"), in both sentences, the word "should" is changed to "shall".

The following is added to this section:

Option:

The STOP/SLOW paddle may be used with either a 300 mm (12 in) short handle or 1650 mm (66 in) long handle.

The 600 x 600 mm (24 x 24 in) size of the STOP/SLOW paddle may be used where greater emphasis is needed and speeds are 50 km/h (30 mph) or more.

Support:

Refer to Department of Transportation's Flagging Instruction Handbook for fundamentals of flagging. See Section 1A.11 for information regarding this publication.

Section 6E.05 Flagger Stations

The following is added to this section:

Option:

The distances shown in MUTCD Table 6E-1 may be increased for downgrades, as shown in Table 6E-101.

Table 6E-101. Longitudinal Buffer Space on Downgrades*

Speed (km/h)	Downgrade		
	-3% (m)	-6% (m)	-9% (m)
30	32	35	35
40	50	50	53
50	66	70	74
60	87	92	97
70	110	116	124
80	136	144	154
90	164	174	187
100	194	207	223
110	227	243	262

Speed (mph)	Downgrade		
	-3% (ft)	-6% (ft)	-9% (ft)
20	116	120	126
25	158	165	173
30	205	215	227
35	257	271	287
40	315	333	354
45	378	400	427
50	446	474	507
55	520	553	593
60	598	638	686
65	682	728	785
70	771	825	891

* Exhibit 3-2. A Policy on Geometric Design of Highways and Streets, AASHTO, 2001, p.115.

CHAPTER 6F. TEMPORARY TRAFFIC CONTROL ZONE DEVICES

Section 6F.02 General Characteristics of Signs

The following is added to this section:

Support:

Sign design details are contained in FHWA's "Standard Highway Signs" book and Department of Transportation's "Traffic Sign Specifications". See Section 1A.11 for information regarding these publications.

Table 6F-101 shows a list of California Temporary Traffic Control Signs.

Figure 6F-101 shows California Temporary Traffic Control Signs.

Section 6F.03 Sign Placement

Guidance:

In Paragraph 8 ("Neither portable nor…"), the first sentence is deleted and replaced as follows:

Sign supports should be located so as to accommodate pedestrians and bicyclists in areas designated for their use. A minimum lateral width of 1.2 m (4 ft) should be maintained for pedestrian pathways.

Figure 6F-3. Regulatory Signs in Temporary Traffic Control Zones

Standard:

No sign shall have a metric unit or message, except per CVC 21351.3. Hence, the following signs shall not be used in California with metric messages unless specifically allowed per CVC 21351.3.

Speed Limit (R2-1) Metric version.
Weight Limit (R12-1) Metric version.
Axle Weight Limit (R12-2) Metric version.
Weight Limit (R12-5) Metric version.
METRIC (R12-6) Plaque.

Section 6F.05 Regulatory Sign Authority

The following is added to this section:

Support:

Some of the California regulatory signs used in temporary traffic control zones are shown in Figure 6F-101.

Section 6F.08 ROAD (STREET) CLOSED Sign (R11-2)

The following is added to this section:

Option:

The words RAMP CLOSED may be substituted for ROAD (STREET) CLOSED where applicable.

Section 6F.09 Local Traffic Only Signs (R11-3a, R11-4)

The following is added to this section:

Option:

The words RAMP CLOSED may be substituted for ROAD (STREET) CLOSED where applicable.

Section 6F.14 Special Regulatory Signs

The following is added to this section:

Support:

See Section 6C.01 for construction speed zones.

Table 6F-101. List of California Temporary Traffic Control Signs (Sheet 1 of 2)

California (CA) Code	MUTCD Code	Title of Sign	Supplement Section	MUTCD Section
C1	W20-2	DETOUR	6F.18	6F.18
C2	R11-2	ROAD (STREET) CLOSED	6F.08, 6F.28	6F.08
C3	R11-3a	ROAD CLOSED XX MILES AHEAD, LOCAL TRAFFIC ONLY	6F.09	6F.09
C3A	R11-4	ROAD (STREET) CLOSED TO THRU TRAFFIC	6F.09	6F.09
C4	W21-2	FRESH OIL (TAR)	None	6F.32
C5	M4-10	Detour Arrow	None	6F.53
C5A	M4-8	DETOUR	6F.53	6F.53
C6	W8-7	LOOSE GRAVEL	6F.102	None
C7	M4-8a	END DETOUR	None	6F.53
C8	W21-3	ROAD MACHINERY AHEAD	None	6F.33
C9A	None	Flagger Symbol	6F.29	None
C11	G20-1	ROAD WORK NEXT XX MILES	None	6F.51
C12	None	NARROW LANE(S)	6F.103	None
C14	G20-2	END ROAD WORK	6F.52	6F.52
C16	W20-4	ONE LANE ROAD	None	6F.20
C17	None	Road Work/Speed Limit	6F.104	None
C19	W20-3	ROAD (STREET) CLOSED	6F.19	6F.19
C20	None	RIGHT LANE CLOSED AHEAD	6F.21	None
C20A	None	LEFT Plaque	6F.21	None
C20B	None	Numeral Plaque	6F.21	None
C22B	W21-1a	Workers	None	6F.31
C22C	W21-1	WORKERS	None	6F.31
C23	W20-1	ROAD (STREET) WORK	6F.17	6F.17
C23B	None	ROAD (STREET) WORK Informational Plaque	6F.17	None
C24	W21-5b	SHOULDER WORK AHEAD	None	6F.35
C25	W21-6	SURVEY CREW	None	6F.36
C26	G20-4	PILOT CAR FOLLOW ME	None	6F.54
C27	None	OPEN TRENCH	6F.105	None
C28A	Not Assigned	STOP Paddle	6E.03, 7E.05	6E.03, 7E.05
C28B	Not Assigned	SLOW Paddle	6E.03	6E.03
C29	None	XXX FT	6F.49	None
C30	None	LANE CLOSED	6F.21	None
C30A	None	SHOULDER CLOSED	6F.35	None
C30B	W21-5b	RIGHT (LEFT) SHOULDER CLOSED XXX FT	None	6F.35

Table 6F-101. List of California Temporary Traffic Control Signs (Sheet 2 of 2)

California (CA) Code	MUTCD Code	Title of Sign	Supplement Section	MUTCD Section
C31	W8-9	LOW SHOULDER	6F.105	6F.42
C31A	None	NO SHOULDER	6F.41, 6F.105	None
C33	W22-1	BLASTING ZONE AHEAD	None	6F.39
C34	W22-2	TURN OFF 2-WAY RADIO AND PHONE	None	6F.40
C35	W22-3	END BLASTING ZONE	None	6F.41
C36	W3-4	BE PREPARED TO STOP	None	6F.29
C37	None	TRAFFIC CONTROL – WAIT AND FOLLOW PILOT CAR	6F.54	None
C38	None	USE NEXT EXIT	6F.28	None
C40	None	TRAFFIC FINES DOUBLED IN CONSTRUCTION ZONES	6F.106	None
C40A	None	TRAFFIC FINES DOUBLED IN WORK ZONES	6F.106	None
C42	R9-11a	SIDEWALK CLOSED, (ARROW) CROSS HERE	None	6F.13
SC3	None	DETOUR with Arrow	6F.53	None
SC5	None	SPECIAL EVENT AHEAD	6F.17	None
SC6A	None	Day/Month Plaque	6F.28	None
SC6B	None	Time Plaque	6F.28	None
SC6-3	None	RAMP CLOSED (Not more than one day)	6F.28	None
SC6-4	None	RAMP CLOSED (More than one day)	6F.28	None
SC7	None	RAMP CLOSED, USE RAMP AT ___	6F.28	None
SC8	None	___ EXIT – RAMP CLOSED	6F.28	None
SC9	None	FWY DETOUR with Arrow	6F.53	None
SC10	None	LANE CLOSED AHEAD	6F.107	None
SC11	None	LANE CLOSED	6F.107	None
SC12	W23-1	SLOW TRAFFIC AHEAD	6F.107	6F.27
SC13	None	DO NOT PASS	6F.107	None
SC15	None	CAUTION	6F.107	None
SC16	W8-12	NO CENTER STRIPE	6F.44	6F.44

Figure 6F-101. California Temporary Traffic Control Signs
(Sheet 1 of 2)


C9A

C12

C17 (Front)

C17 (Back)

C20

C20A

C20B

C23B

C27

C29

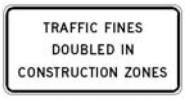
C30

C30A

C31A

C37

C38



C40

C40A

SC3

SC5

SC6A

SC6B

SC6-3

SC6-4

SC7

SC8

Note: All sign codes are California (CA) Codes.

Figure 6F-101. California Temporary Traffic Control Signs
(Sheet 2 of 2)

SC9

SC10

SC11

SC13

SC15

Note: All sign codes are California (CA) Codes.

Section 6F.15 Warning Sign Function, Design and Application

Standard:

Paragraphs 11 ("Because of their…") through 14 ("On secondary roads…") are deleted for application and shall not be used in California as "higher-speed", "moderately low" and "very low" are not defined in the MUTCD. Use Table 2C-2 in Part 2 for size of warning signs.

The following is added to this section:

Support:

Some of the California warning signs used in temporary traffic control zones are shown in Figure 6F-101.

Section 6F.17 ROAD (STREET) WORK Sign (W20-1)

The following is added to this section:

Option:

The words RAMP WORK or RAMP WORK AHEAD may be substituted for ROAD (STREET) WORK or ROAD (STREET) WORK AHEAD where applicable.

The ROAD (STREET) WORK Informational Plaque (CA Code C23B) may be used with ROAD (STREET) WORK (W20-1) sign.

Standard:

The message displayed on the ROAD (STREET) WORK Informational Plaque (CA Code C23B) shall be worded in terms common to motorists, as shown in examples below. The height and width of the plate will vary according to the lettering size and message. The width of the plate shall not exceed the overall width of the W20-1 sign.

Support:

Following are some example messages:

BRIDGE REPLACEMENT
BRIDGE WIDENING
BRIDGE REPAIR
CURVE IMPROVEMENT
HIGHWAY REALIGNMENT
HIGHWAY WIDENING
HIGHWAY WIDENING AND PAVING
HIGHWAY REHABILITATION
STORM REPAIR
PAVING
SIGNING IMPROVEMENT
PAVEMENT MAINTENANCE
SAFETY IMPROVEMENT

Guidance:

The SPECIAL EVENT AHEAD (CA Code SC5) sign should be used in lieu of the ROAD (STREET) WORK (W20-1) sign for special events, such as bike races, movie filming, etc., where the event is on the travel way or close enough or of such a nature as to cause a potential danger to motorists.

Section 6F.18 DETOUR Sign (W20-2)

Standard:

In Paragraph 1 ("The DETOUR…"), the word "should" is changed to "shall". Refer to CVC 21363 for detour signs.

Section 6F.19 ROAD (STREET) CLOSED Sign (W20-3)

The following is added to this section:

Option:

The words RAMP CLOSED or RAMP CLOSED AHEAD may be substituted for ROAD (STREET) CLOSED or ROAD (STREET) CLOSED AHEAD where applicable.

Figure 6F-4. Warning Signs in Temporary Traffic Control Zones

Standard:

No sign shall have a metric unit or message, except per CVC 21351.3. Hence, the following signs shall not be used in California with metric messages unless specifically allowed per CVC 21351.3.

Speed Reduction (W3-5a) Metric version.
Low Clearance (W12-2) Metric version.
Advisory Speed Plaque (W13-1) Metric version.
ROAD (STREET) WORK (W20-1) Metric version.
DETOUR (W20-2) Metric version.
ROAD (STREET) CLOSED (W20-3) Metric version.
ONE LANE ROAD (W20-4) Metric version.
RIGHT LANE CLOSED (W20-5) Metric version.
RIGHT TWO LANES CLOSED (W20-5a) Metric version.
Distance (W16-2) Plaque Metric version.
RIGHT SHOULDER CLOSED (W21-5b) Metric version.
ROAD WORK NEXT X KM (G20-1) Metric version.

The Reverse Curve (W1-4b and W1-4c) signs shall not be used in California. The Reverse Curve (W1-4) sign shall be used instead. See Section 2C.06.

The RAMP NARROWS (W5-4) sign shall not be used in California. The ROAD NARROWS (W5-1) sign or NARROW LANE(S) (CA Code C12) sign, as appropriate, shall be used instead. See Sections 2C.15 and 6F.103.

The ON RAMP (W13-4) Plaque shall not be used in California. See Section 6F.25.

The MUTCD Flagger symbol (W20-7a) sign shall not be used in California, the California Flagger symbol (CA Code C9A) sign shall be used, instead. See Section 6F.29.

Section 6F.21 Lane(s) Closed Signs (W20-5, W20-5a)

The following is added to this section:

Option:

The RIGHT LANE CLOSED AHEAD (CA Code C20) sign by itself, or in combination with LEFT plaque (CA Code C20A) and/or Numeral plaque (CA Code C20B) may be used in lieu of the MUTCD's Lane Closed (W20-5) sign.

The LANE CLOSED (CA Code C30) sign may be used within a closed lane of a multilane highway as follow-up information to the appropriate advance warning signs. The C30 (CA Code) may be repeated at intervals, throughout long lane closures, as a reminder to motorists.

The word RAMP CLOSED may be used as an alternate message on surface streets to warn that the upcoming freeway/expressway on ramp is closed.

Section 6F.22 CENTER LANE CLOSED AHEAD Signs (W9-3, W9-3a)

Support:

For moving lane closures on State highways, see Department of Transportation's Standard Plan T-16. See Section 1A.11 for information regarding this publication.

Do not use the CENTER LANE CLOSED AHEAD (W9-3) and Center Lane Closed Ahead (W9-3a) signs for moving lane closures on State highways.

Section 6F.23 THRU TRAFFIC MERGE LEFT (RIGHT) Sign (W4-7)

The following is added to this section:

Support:

Refer to Section 2C.33 for Lane Ends (W4-2, W9-1 and W9-2) signs and 2C.109 for Lane Drop (CA Code W73, W73A and MUTCD Code W4-1a) signs.

Section 6F.24 Lane Ends Sign (W4-2)

Guidance:

The word "may" is changed to "should".

Section 6F.25 ON RAMP Plaque (W13-4)

Standard:

This section is deleted for application and shall not be used in California due to the potential for conflict if it is used when the work is being done on an off ramp.

Section 6F.26 RAMP NARROWS Sign (W5-4)

Standard:

This section is deleted for application and shall not be used in California. The ROAD NARROWS (W5-1) sign or NARROW LANE(S) (CA Code C12) sign, as appropriate, shall be used instead. See Sections 2C.15 and 6F.103.

Section 6F.28 EXIT OPEN, EXIT CLOSED, EXIT ONLY Signs (E5-2, E5-2a, E5-3)

The following is added to this section:

Option:

The USE NEXT EXIT (CA Code C38) sign may be used with the RAMP CLOSED (R11-2, alternate message per Section 6F.08) sign on freeways if the next exit provides access to destinations from the closed ramp.

Guidance:

The RAMP CLOSED (Not more than one day) (CA Code SC6-3) sign should be used to inform motorists of the temporary closing of a freeway or expressway entrance or exit ramp for not more than one day.

The RAMP CLOSED (More than one day) (CA Code SC6-4) sign should be used to inform motorists of the temporary closing of a freeway or expressway entrance or exit ramp for more than one day.

The SC6-3 and SC6-4 (CA Codes) signs should be removed when the ramp is reopened to traffic.

Standard:

The SC6-3 and SC6-4 (CA Codes) signs shall display the correct day of the week, month, calendar day and times the ramp is closed.

Support:

The Day/Month Plaque (CA Code SC6A) is used on the RAMP CLOSED (CA Code SC6-3 and SC6-4) signs, to provide the appropriate day of the week and month a freeway or expressway entrance or exit ramp is closed.

The Time Plaque (CA Code SC6B) is used on the RAMP CLOSED (CA Code SC6-3 and SC6-4) signs, to provide the appropriate time of the day a freeway or expressway entrance or exit ramp is closed.

Option:

The RAMP CLOSED, USE RAMP AT ___ (CA Code SC7) sign may be used in lieu of the RAMP CLOSED (R11-2, alternate message per Section 6F.08) sign and USE NEXT EXIT (CA Code C38) signs as shown on Department of Transportation's Standard Plan T-14 to inform motorists of a closed entrance or exit ramp and to provide an alternate route. See Section 1A.11 for information regarding these publication.

Guidance:

The ___ EXIT – RAMP CLOSED (CA Code SC8) sign should be used to inform motorists of a closed exit ramp.

Standard:

The SC8 (CA Code) sign shall be placed on the right shoulder, upstream of the preceding exit ramp.

Section 6F.29 Flagger Sign (W20-7a, W20-7)

Standard:

The MUTCD Flagger symbol (W20-7a) sign shall not be used, the California Flagger symbol (CA Code C9A) sign shall be used, instead.

Section 6F.30 Two-Way Traffic Sign (W6-3)

The following is added to this section:

Guidance:

The Two-Way Traffic (W6-3) sign should also be used at locations where motorists could perceive that they are on a one-way roadway when, in fact, they are on a two lane, two-way highway.

Support:

Following are some typical situations:

- Construction sites where a two-lane highway is being converted to a freeway or an expressway.
- Two-lane, two-way highways where ultimate freeway or expressway right-of-way has been purchased and grading for the full width has been completed.
- Two-lane, two-way highways following long sections of multi-lane freeway or expressway.

Section 6F.35 Shoulder Work Signs (W21-5, W21-5a, W21-5b)

The following is added to this section:

The SHOULDER CLOSED (CA Code C30A) sign may be used within a shoulder area that has been closed due to work near the traveled way. The C30A (CA Code) sign is supplemental to appropriate advance warning signs.

Section 6F.42 Shoulder Signs (W8-4, W8-9, W8-9a)

The following is added to this section:

The NO SHOULDER (CA Code C31A) sign may be used where no earth, gravel or paved shoulders are available for vehicles to pull off the roadway.

Section 6F.43 UNEVEN LANES Sign (W8-11)

Guidance:

The following is added at the end of the paragraph in this section:

"…of 50 mm (2 in) or more."

Section 6F.44 NO CENTER STRIPE Sign (W8-12)

The following is added to this section:

Standard:

The NO CENTER STRIPE (W8-12) sign shall not be used on State highways. Whenever construction or maintenance work causes obliteration of center stripe, temporary or permanent center stripe shall be in place prior to opening the State highway to public traffic.

Section 6F.49 Supplementary Distance Plaque (W7-3a)

The following is added to this section:

Option:

The XXX FT (CA Code C29) Plaque may be used on the face of a warning sign to indicate the length of highway over which a work activity is being conducted, or over which a condition exists in the temporary traffic control zone.

Section 6F.52 END ROAD WORK Sign (G20-2)

The following is added to this section:

Option:

The END ROAD WORK (G20-2) sign may not be used if the end of the work zone is obvious to motorists or falls within a larger project's limits.

Section 6F.53 Detour Signs (M4-8, M4-8a, M4-8b, M4-9, M4-9a, M4-9b, M4-9c, and M4-10)

The following is added to this section:

Guidance:

The DETOUR (M4-8) sign should be placed on tangent sections at intervals not to exceed 400 m (1300 ft) and at major intersections.

Option:

In urban areas, the M4-8 signs may be placed at every intersection.

Guidance:

The DETOUR with Arrow (CA Code SC3) sign should be used for unnumbered highways, for emergency situations, for periods of short duration, or where, over relatively short distances, road users are guided along the detour and back to the desired highway without route markers.

The FWY DETOUR with Arrow (CA Code SC9) sign should be used to inform motorists of the direction to follow for a freeway detour.

Section 6F.54 PILOT CAR FOLLOW ME Sign (G20-4)

The following is added to this section:

Guidance:

The TRAFFIC CONTROL – WAIT AND FOLLOW PILOT CAR (CA Code C37) sign should be used at intersecting approaches to a work zone when pilot cars are controlling reversible lane traffic.

Section 6F.55 Portable Changeable Message Signs

The following is added to this section:

Standard:

On State highways, the message displayed on Portable Changeable Message signs shall be visible from a distance of 460 m (1500 ft) and shall be legible from a distance of 230 m (750 ft), at noon on a cloudless day, by persons with vision of or corrected to 20/20.

Guidance:

On local roads, the message displayed on Portable Changeable Message signs should be visible from a distance of 460 m (1500 ft) and shall be legible from a distance of 230 m (750 ft), at noon on a cloudless day, by persons with vision of or corrected to 20/20.

Support:

Refer to Department of Transportation's Standard Specifications Section 12-3.12 for visibility criteria cited. See Section 1A.11 for information regarding this publication.

Section 6F.56 Arrow Panels

The following is added to this section:

Standard:

The arrow panel shall be located behind any channelizing devices used to transition traffic from the closed lane.

Support:

Department of Transportation's Standard Specifications for flashing arrow panels are in Section 12-3.03. See Section 1A.11 for information regarding this publication.

Figure 6F-6. Advance Warning Arrow Display Specifications

Standard:

For State highways, the panel type B shall mean type II and the panel type C shall mean type I.

For State highways, the panel type B (or type II) shall have a minimum size of 1800 x 900 mm (72 x 36 in).

The minimum legibility distance is the distance at which flashing arrow panels shall be legible at noon on a cloudless day and at night by persons with vision of or corrected to 20/20.

Support:

Refer to Department of Transportation's Standard Specifications Section 12-3.03 for visibility criteria cited. See Section 1A.11 for information regarding this publication.

Section 6F.58 Channelizing Devices

The following is added to this section:

Guidance:

The spacing of channelizing devices should not exceed the maximum distances shown in Table 6F-102 of This Supplement.

Section 6F.59 Cones

The following is added to this section:

Option:

Retroreflectorization of 700 mm (28 in) or larger cones may be provided by a 325 mm (13 in) band (sleeve).

Standard:

On State highways, the retroreflectorized bands shall be visible at 300 m (1000 ft) at night under illumination of legal high beam headlights, by persons with vision of or corrected to 20/20.

Guidance:

On local roads, the retroreflectorized bands should be visible at 300 m (1000 ft) at night under illumination of legal high beam headlights, by persons with vision of or corrected to 20/20.

Support:

Refer to Department of Transportation's Standard Specifications Section 12-3.10 for visibility criteria cited. See Section 1A.11 for information regarding this publication.

Section 6F.60 Tubular Markers

The following is added to this section:

Standard:

On State highways, the retroreflectorized bands shall be visible at 300 m (1000 ft) at night under illumination of legal high beam headlights, by persons with vision of or corrected to 20/20.

Guidance:

On local roads, the retroreflectorized bands should be visible at 300 m (1000 ft) at night under illumination of legal high beam headlights, by persons with vision of or corrected to 20/20.

Table 6F-102. Maximum Spacing of Channelizing Devices

Speed (km/h)	Maximum Channelizer Spacing		
	Taper* (m)	Tangent (m)	Conflict** (m)
30	6	12	3
40	8	16	4
50	10	20	5
60	12	24	6
70	14	28	7
80	16	32	8
90	18	36	9
100	20	40	10
110	22	44	11

Speed (mph)	Maximum Channelizer Spacing		
	Taper* (ft)	Tangent (ft)	Conflict** (ft)
20	21	42	10
25	26	53	13
30	32	63	15
35	37	74	18
40	42	84	20
45	48	95	23
50	53	106	25
55	58	116	28
60	63	127	30
65	69	137	33
70	74	148	35

* Maximum channelizer spacing for all speeds on one-lane/two-way tapers is 6.1 m (20 ft).
Maximum channelizer spacing for all speeds on downstream tapers is 6.1 m (20 ft).
All other tapers are as shown.

** Use on intermediate and short-term projects for taper and tangent sections where there are no pavement markings or where there is a conflict between existing pavement markings and channelizers.

On State highways a spacing of 3 m (10 ft) is recommended for taper and tangent sections shown on TA-31 and TA-32.

Support:

Refer to Department of Transportation's Standard Specifications Section 12-3.04 for visibility criteria cited. See Section 1A.11 for information regarding this publication.

Section 6F.62 Drums

The following is added to this section:

Standard:

On State highways, the retroreflectorized bands shall be visible at 300 m (1000 ft) at night under illumination of legal high beam headlights, by persons with vision of or corrected to 20/20.

Guidance:

On State highways, the retroreflectorized bands should be visible at 300 m (1000 ft) at night under illumination of legal high beam headlights, by persons with vision of or corrected to 20/20.

Support:

Refer to Department of Transportation's Standard Specifications Section 12-3.04 for visibility criteria cited. See Section 1A.11 for information regarding this publication.

Section 6F.70 Opposing Traffic Lane Divider

The following is added to this section:

Guidance:

The Opposing Traffic Lane Divider (W6-4) sign should only be used to supplement a channelizing device that is being used to separate opposing traffic in a maintenance or construction work zone.

Section 6F.71 Pavement Markings

The following is added to this section:

Guidance:

Centerlines and lane lines should be placed, replaced, or delineated where appropriate before the roadway is opened to traffic.

Section 6F.72 Temporary Pavement Markings

The following is added to this section:

Standard:

Temporary lane lines and/or centerlines shall consist of retroreflectorized lines approximately 600 mm (24 in) long, 100 mm (4 in) wide, spaced approximately 7.3 m (24 ft) apart.

Option:

Day/night raised retroreflectorized pavement markers, approved by the Department of Transportation, may be used in lieu of 600 mm (24 in) lines, spaced approximately 7.3 m (24 ft) apart.

Guidance:

Right edge lines should not be simulated with dashed lines or raised pavement markers because they could confuse motorists.

Option:

Portable delineators, permanent type delineators, etc., may be used where it is considered desirable to enhance the edge of traveled way due to curvilinear alignment, narrowing pavement, etc.

Standard:

Locations on two-lane conventional highways where no-passing zone centerline delineation has been obliterated shall be posted with a sign package consisting of a ROAD (STREET) WORK (W20-1) sign and a DO NOT PASS (R4-1) sign.

Guidance:

The R4-1 sign should be posted at 600 m (2000 ft) intervals throughout the extended no-pass zone. A PASS WITH CARE (R4-2) sign should also be placed at the end of the zone.

Section 6F.73 Raised Pavement Markers

Standard:

Paragraph 1 ("If raised pavement…") is deleted and replaced with the following:

If raised pavement markers are used to substitute for broken line segments, at least two retroreflective markers shall be placed, one at each end of a segment of 0.9 m (3 ft). For segments over 2.4 m (8 ft), a group of at least three retroreflective markers shall be equally spaced at no greater than 1.2 m (4 ft). See Section 3A.05 for more details.

Section 6F.74 Delineators

The following is added to this section:

Standard:

On State highways, the retroreflectorized bands shall be visible at 300 m (1000 ft) at night under illumination of legal high beam headlights, by persons with vision of or corrected to 20/20.

The delineators shall be placed 0.6 m (2 ft) to 1.8 m (6 ft) outside the outer edge of the shoulder. They shall be 75 x 300 mm (3 x 12 in) minimum size.

Guidance:

On local roads, the retroreflectorized bands should be visible at 300 m (1000 ft) at night under illumination of legal high beam headlights, by persons with vision of or corrected to 20/20.

Support:

Refer to Department of Transportation's Standard Specifications Section 12-3.04 for visibility criteria cited. See Section 1A.11 for information regarding this publication.

Section 6F.77 Flashing Warning Beacons

Standard:

In Paragraph 2 ("Flashing warning beacons…"), the phrase "200 mm (8 in)" is changed to "300 mm (12 in)".

The following is added to this section:

Standard:

The beacon lens shall have a visible diameter of 300 mm (12 in) and shall conform to Department of Transportation's standards for signal lenses, and the lighting unit shall have a visor and back plate or other suitable means of providing adequate contrast.

The mounting height shall be between 1.8 m (6 ft) and 3 m (10 ft), measured from the bottom of the base to the center of the lens.

Section 6F.80 Temporary Traffic Control Signals

Standard:

For State highways, the following is added at the end of Paragraph 1 ("Temporary traffic control…"):

"…and/or the Department of Transportation's Standard Plans and Special Provisions. See Section 1A.11 for information regarding this publication."

Section 6F.81 Temporary Traffic Barriers

The following is added to this section:

Support:

More specific information on the use of portable barriers and crash cushions can be obtained from the Department of Transportation's Standard Plans and Standard Specifications. See Section 1A.11 for information regarding this publication.

Section 6F.82 Crash Cushions

The following is added to this section:

Support:

Information about designs and types of crash cushions currently approved for use on State highways is available from Department of Transportation's Division of Traffic Operations in Sacramento.

Section 6F.84 Rumble Strips

The following is added to this section:

Support:

Rumble strips are not suitable as a riding surface for bicycles and motorcycles.

Refer to Section 3B.106 for more details on rumble strips.

Guidance:

Where cyclists are permitted, provisions should be made to allow passage through or around the rumble strips.

Section 6F.101 Channelizers (Permanent type, flexible post)

Support:

Channelizers are implanted in the ground or affixed to the pavement, and are not susceptible to displacement, and are capable of normally withstanding numerous vehicular impacts.

Channelizers are generally used in series to create a visual fence/barrier, to provide additional guidance and/or restriction to traffic.

Option:

They also may be used in lieu of cones, portable delineators, or drums, to channelize traffic, divide opposing lanes of traffic, etc.

Standard:

The design of a channelizer shall be as shown in Figure 6F-102.

The height shall be 900 mm (36 in) minimum (700 mm (28 in) where speeds are 65 km/h (40 mph) or less), the width of the post shall be 56 mm (2 ¼ in) minimum and the color predominantly orange. The 75 x 300 mm (3 x 24 in) minimum retroreflective unit shall be visible at 300 m (1000 ft) at night under illumination of legal high beam headlights, by persons with vision of or corrected to 20/20.

The color of the channelizer retroreflective unit shall be white and posts shall be orange.

Support:

Refer to Department of Transportation's Standard Specifications Section 12-3.07 for visibility criteria cited. See Section 1A.11 for information regarding this publication.

Refer Chapter 3F for other details and requirements of channelizers.

Section 6F.102 LOOSE GRAVEL Sign (W8-7)

Guidance:

The LOOSE GRAVEL (W8-7) sign should be used on chip seal jobs or other areas to warn motorists that there is loose gravel on the roadway.

Standard:

When used, the W8-7 sign shall be placed at the beginning of work and at maximum 610 m (2000 ft) intervals.

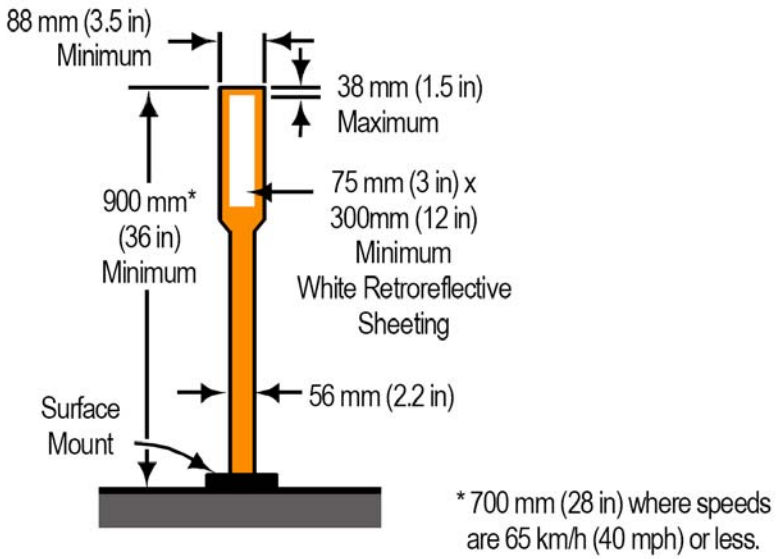
Option:

The Advisory Speed Plaque (W13-1) may be used in combination with the W8-7 sign to indicate the need to decrease speed at a particular location.

Guidance:

The advisory speed should be reasonable or prudent, considering weather, visibility, traffic, surface condition and width of the roadway.

Figure 6F-102. Channelizer



Standard:

On State highways for seal coat projects, the W13-1 (35) Plaque shall supplement the W8-7 sign during placing and/or brooming of screenings.

Section 6F.103 NARROW LANE(S) Sign (CA Code C12)

Option:

The NARROW LANE(S) (CA Code C12) sign may be used, when appropriate, to warn the approaching motorist of a narrow lane condition.

Guidance:

When used, the C12 (CA Code) sign should be used in conjunction with an Advisory Speed Plaque (W13-1). See Section 2C.46.

Section 6F.104 Road Work/Speed Limit Sign (CA Code C17)

Standard:

The Road Work/Speed Limit (CA Code C17) sign shall not be used on State highways.

The C17 (CA Code) sign shall only be used in conjunction with appropriate advance warning signs.

The C17 (CA Code) signs shall be removed promptly when no longer applicable.

Support:

The C17 (CA Code) sign is authorized for use by CVC Section 22362. This section provides authority to post a speed limit of not less than 40 km/h (25 mph) at locations where employees of any contractor, or of the agency in charge of the job, are engaged in work upon the roadway.

Posting unrealistically low speed limits will result in loss of sign credibility and a high violation rate.

Guidance:

Before using a C17 (CA Code) sign, work zone conditions should be analyzed to determine what maximum speed limit would be appropriate for that particular location.

The C17 (CA Code) sign should be placed within 120 m (400 ft) of the zone where workers are on the roadway or so nearly adjacent as to be endangered by traffic.

Option:

The C17 (CA Code) sign may be provided by the agency having jurisdiction over the street or road.

Section 6F.105 OPEN TRENCH Sign (CA Code C27)

Standard:

The OPEN TRENCH (CA Code C27) shall be used in advance of open trenches in/or adjacent to roadway.

The edge of the traveled way shall be defined by edge line delineation consisting of appropriate markers or striping. Edge line delineation shall be white when located on the right of traffic and yellow when located on the left of traffic.

Support:

The 900 x 900 mm (36 x 36 in) size is for conventional state highways and the 1200 x 1200 mm (48 x 48 in) size is for use on freeways and expressways.

Guidance:

Trenches in excess of 48 mm (0.15 ft) in depth but not exceeding 76 mm (0.25 ft) in depth that are less than 2.4 m (8 ft) from the edge of traveled way should be identified by LOW SHOULDER (W8-9) portable signs on Type II barricades set in the trench adjacent to the edge of pavement at intervals not to exceed 610 m (2,000 ft).

Option:

Portable delineators may be placed at intervals not to exceed 30 m (100 ft) in lieu of edge line delineation.

Standard:

Trenches in excess of 76 mm (0.25 ft) in depth that are less than 2.4 m (8 ft) from the edge of traveled way shall be identified by C27 (CA Code) and NO SHOULDER (CA Code C31A) portable signs on Type II or Type III barricades alternately set in the trench at intervals not to exceed 610 m (2,000 ft).

Guidance:

Channelizers or delineators should be placed 0.6 m (2 ft) to 1.8 m (6 ft) outside of the edge line at 30 m (100 ft) intervals.

Trenches in excess of 76 mm (0.25 ft) in depth but not exceeding 762 mm (2.5 ft) in depth that are 2.4 m (8 ft) to 4.6 m (15 ft) from the edge of traveled way should be identified by C27 (CA Code) portable signs on Type II or Type III barricades set in the trench at intervals not to exceed 610 m (2,000 ft). Delineators should be placed at 60 m (200 ft) intervals within 0.6 m (2 ft) from the edge of the trench and at 30 m (100 ft) intervals for edge conditions exceeding 152 mm (0.5 ft) in depth.

Trenches in excess of 152 mm (0.5 ft) in depth but not exceeding 762 mm (2.5 ft) in depth that are more than 4.6 m (15 ft) from the edge of traveled way at locations where a recovery area was available prior to construction should be identified by placing delineators at 60 m (200 ft) intervals within 0.6 m (2 ft) from the edge of the trench and by placing C27 (CA Code) signs in the trench at intervals not to exceed 610 m (2,000 ft).

Standard:

Signing for trenches in excess of 762 mm (2.5 ft) in depth shall be based upon engineering judgement or studies (as noted in Section 1A.09) to ensure proper visibility of barricades and signing.

Section 6F.106 Traffic Fines Signs (CA Code C40 and C40A)

Option:

The TRAFFIC FINES DOUBLED IN CONSTRUCTION ZONES (CA Code C40) and TRAFFIC FINES DOUBLED IN WORK ZONES (CA Code C40A) signs may be placed approximately 150 m (500 ft) in advance of the first required Temporary Traffic Control sign(s). The placement of the C40 and C40A (CA Codes) signs is at the discretion of the person(s) in responsible charge of the work zone.

Guidance:

The C40A (CA Code) sign is intended to be manufactured as a fabric sign and should be used on a short term (daily) basis only. Longer term situations should use the C40 (CA Code) sign.

Section 6F.107 Moving Lane Closure Signs (W23-1 and CA Code SC10, SC11, SC13 , SC15)

Standard:

On State highways, the following signs shall be used as shown in the Department of Transportation's Standard Plans T15, T16 and T17 for moving lane closures. See Section 1A.11 for information regarding this publication.

LANE CLOSED AHEAD (CA Code SC10).
LANE CLOSED (CA Code SC11).
SLOW TRAFFIC AHEAD (W23-1).
DO NOT PASS (CA Code SC13).
CAUTION (CA Code SC15).

The Moving Lane Closure signs shall have a black legend on either a white or an orange background.

If used, the SC10 (CA Code) sign and a Type II flashing arrow sign shall be mounted on the rear of the designated sign vehicle.

The SC11 (CA Code) sign and a Type II flashing arrow sign shall be mounted on the rear of the designated sign vehicle.

If used, the W23-1 sign shall be mounted on the rear of the designated sign vehicle.

The SC13 (CA Code) sign shall be mounted on the rear and/or the front of the designated sign vehicle.

If used, the SC15 (CA Code) sign shall be mounted on the front of the designated sign vehicle.

Section 6F.108 Object Markers

Standard:

When used in work zones, the CA Type N-3 (OM1-3) object markers shall have an orange retroreflective background.

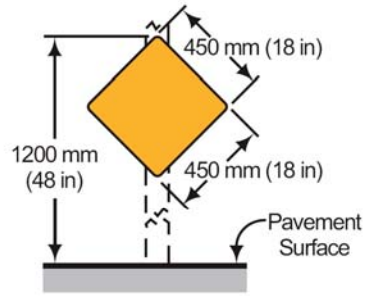
When used in work zones, the CA Type P and R (OM-3L, OM-3R and OM-3C) object marker shall have alternating retroreflective orange and white stripes.

Support:

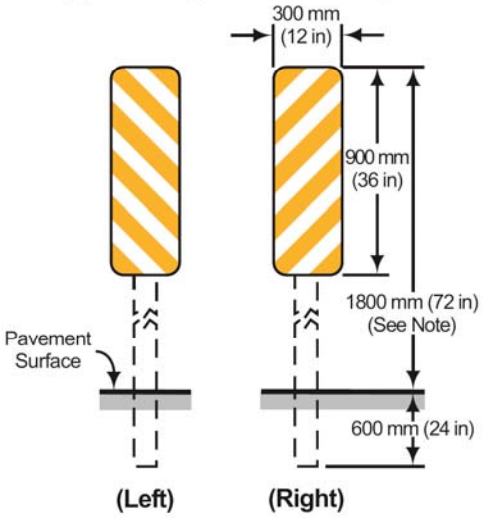
See Chapter 3C for more details.

Figure 6F-103. Examples of Object Markers in Temporary Traffic Control Zones

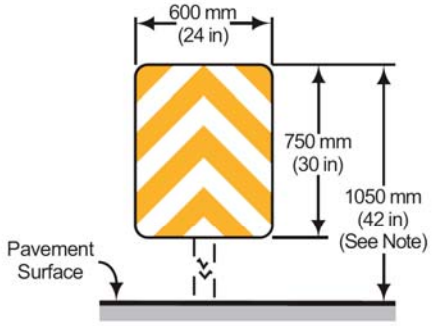
CA Type N-3 Object Marker (OM1-3)



CA Type P Object Markers (OM-3L&R)



CA Type R Object Marker (OM-3C)



Note:
The bottom of the marker is normally mounted 0.3 m (1 ft) above the pavement surface.